USSR UDC 532.529

VOINOV, O. V. and PETROV, A. G., Moscow

"The Movement of a Small Sphere in a Nonuniform Flow of Incompressible Fluid"

Novosibirsk, Zhurnal Prikladnoy Mekhaniki i Tekhnicheskoy Fiziki, No 5, Sep/Oct 73, pp 57-61

Abstract: For the general case of a small sphere moving in an arbitrary potential flow of ideal fluid, integral equations of movement and a partial solution are obtained. It is shown that the force acting on a small sphere in plane flow is central if, and only if, the derivative of the complex potential is of the form $dW/dz = cd^{\lambda}$, where c is an arbitrary complex number and λ is a real number. Movement within a vortex source whose complex potential is $c \log_e z$ is an example.

In calculations for fluids in uniform flow around a cylinder it is shown that particles denser than the fluid can come in contact with the cylinder from a sufficiently close initial point, but lighter spheres cannot. These calculations can be extended to other solids of evaluation. A case of practical interest involves determining the minimum distance at which particles can avoid being sucked into a drain. It can be shown that the number of particles entering the drain per unit time as a function of particle density in the fluid is independent of the velocity of uniform flow.

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USSR

UDC 536.22+536.252

VOINOV, O. V., GOLOVIN, A. M., PETROV, A. G., Moscow

"Transfer of Energy from an Evaporating Drop into the Vapor Medium"

Zhurnal Prikladnoy Mekhaniki i Tekhnicheskoy Fiziki, No 1, 1972, pp 74-78.

Abstract: The distribution of temperature around an evaporating drop in a vapor medium is studied. The transfer of energy occurs by molecular heat conductivity, convection and radiation. The mean free path length of radiation is significantly greater than the characteristic distance over which the temperature changes. The times of relaxation of temperature to its stable value and characteristic distances over which temperature distribution changes are determined.

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Steels

USSR UDC 669.18.046.558.7

KALINNIKOV, Ye. S., MOKHIR, Ye. D., SERGEYEV, A. L., KHASIN, G. A. and VOINOV, S. G.

"Quality of Type ShKh15 Open Hearth Steel Refined with Synthetic Slag"

Moscow, Stal', No 1, Jan 73, pp 23-26.

Abstract: The content of nonmetallic inclusions and the macrostructure of type ShKh15 Steel, made according to the usual technology in a 20 ton electric furnace and according to a technology developed earlier in a 60 ton open hearth furnace is studied following treatment of the metal in the ladle with liquid synthetic slag and pouring into 2.7-4.9 t ingots, and also following several experimental treatments with variations of the mode of oxidation and deoxidation in the furnace and in the ladle with ingot weight 2.7 t. All types of SSh open hearth steel (except that poured into the largest ingot molds) satisfied all requirements and was equal in quality to the electric steel. The optimal results were produced using the SSh technology and using an altered version with tapping of the melt without adding the oxidizers (ores) and with the consumption of aluminum decreased to 200 g/t steel.

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USSR

UDC 669.18.046.558

USHAKOV, S. T., CHERNYAKOV, V. A., VOINOV, S. G., KEYS, N. V., and PRONICHKIN, A. A., Chelyabinsk Metallurgical Plant and Central Scientific Research Institute of Ferrous Metallurgy imeni I. P. Bardin

"Improving the Properties of Kh18N10T Steel From 100-ton Electric Furnaces by Refining the Steel in the Ladle with Liquid Synthetic Slag"

Moscow, Stal', No 3, Mar 73, pp 230-232

Abstract: Two variants of refining 100-ton melts of Kh18N10T stainless steel with liquid synthetic aluminaceous-lime slag were tested at the Chelyabinsk Metallurgical Plant: 1) Simulateneously with titanium alloying (in the form of 70% ferrotitanium on sponge titanium briquettes), and 2) After alloying, introduction of 30% or 70% ferrotitanium into the furance. The contents of O, N, S, and nonmetallic inclusions in the steel, the degree of Ti-adaption in the alloying process, and some technological properties of the metal were investigated. The experimental metal of the first variant possessed higher anticorrosive and plastic properties, and is characterized by lower S- and O-contents and lower nonmetallic inclusions. The introduction of the first variant into industrial production contributed to an increase of technological plasticity and to an improvement of the surface quality of slabs, tubes, and sheets. Three figures, one table, two bibliographic references.

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USSR UDC 669.046.5

SHIRER, G. B., KOMEL'KOV, V. K., VOINOV, S. G., SHALIMOV, A. G., PEGOV, V. G., MOLCHANOVA, A. A., TSIBUL'NIKOV, A. I., and MOKHIR, Ye. D.

"Refining of Ball Bearing Electrical and Martin Steels by Synthetic Lime-Alumina Slag with High Silica Content"

Moscow, V sb. "Sovremennyye problemy kachestva stali" (MISiS). (Collection of Works. Modern Problems of Steel Quality) (Moscow Institute of Steel and Alloys), Izd-vo "Metallurgiya," No 61, 1970, pp 247-249

Translation of Abstract: Results are presented of the refining of ShKh15 steel melted in 100-ton electric furnaces using synthetic slag with high silica content in a ladle. With respect to sulfur content and the level of contamination by sulfide impurities, the obtained steel is similar to metal refined with conventional synthetic slag containing not more than 3% of silica, although the former is more contaminated with oxide and globular impurities. Data are presented on production testing of the described slag at a Martin plant, at which the quality of the 12KhIMF and 20 K steels for pipes was found to be similar to a steel refined with the usual synthetic slag. The production cost of the slag with high silica content is given (It is approximately 30 rubles/ton cheaper than the ordinary slag). 3 tables.

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45

USSR UDC:669.046.558.7

PEGOV, V. G., ANISIMOV, M. Ye., SHIRER, G. B., ABRAMOVA, A. A., KOMEL'KOV, V. K., MOLCHANOVA, A. A., VOINOV, S. G., SHALIMOV, A. G., and PRONICHKIN, A.A.

"Influence of Deoxidation of Metal With Silicocalcium and Addition of Soda to Synthetic Slag on Contamination of Type ShKh15 Steel With Nonmetallic Inclusions"

Proizvodstvo Chernykh Metallov [Production of Ferrous Metals--Collection of Works], No 75, Metallurgiya Press, 1970, pp 215-226

Translation: When type ShKh15 steel is made in 100-T electric furnaces with treatment by synthetic slag in the ladle, the addition of 2.5-3.0% calcinated soda allows the content of oxygen in the steel to be reduced by 25% and the contamination with sulfides, oxide and globular inclusions to be significantly reduced. Deoxidation of ShKh15 steel with silicocalcium 2.0-2.5 kg/T with simultaneous processing with synthetic slag decreases the content of sulfides and oxides, but causes an increase in the content of globular inclusions in the steel. 3 tables; 5 biblio. refs.

1/1

USSR UDC:669.18:621.746

LYUDKOVSKIY, V. M., VOINOV, S. G., KOSOY, L. F., ZOTEYEV, V. S., and FOTAPOVA, V. P.

"Quality of High-Strength Structural Steel Refined in the Ladle With Liquid Synthetic Slag"

Proizvodstvo Chernykh Metallov [Production of Ferrous Metals--Collection of Works], No 75, Metallurgiya Press, 1970, pp 234-239

Translation: Melting of high-strength steel with treatment by synthetic slag allowed the content of sulfur in the metal to be decreased by almost 2 times: from 0.0057 to 0.0034%.

The contamination of the metal by nonmetallic inclusions was decreased, both when estimated by the method of electrolytic separation (from 0.0079 to 0.0062%) and by the method of counting contaminated fields of vision (from 6.8 to 4.2%). The decrease in contamination of the metal with inclusions evaluated as line oxides and brittle silicates, was particularly noticeable.

The results of tensile testing of smooth specimens and specimens with sharp notches indicated that the steel refined with synthetic slag has greater ductility and structural strength. 1 figure; 4 tables; 4 biblio. refs.

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USSR UDC:669.046.558.7:669.14.018.85

VOINOV, S. G., KALINNIKOV, Ye. S., KHASIN, G. A., FEDOSENKO, F. V., and MOKHIR, YE. D.

"Study of the Quality of Pipe Skelp of Type 20K Steel, Made According to the Ordinary Technology and By Various Versions With Treatment With Liquid Synthetic Slag in the Ladle"

Proizvodstvo Chernykh Metallov [Production of Ferrous Metals--Collection of Works], No 75, Metallurgiya Press, 1970, pp 206-215

Translation: Experiments are described on the development of means for improving the quality of pipe skelp of type 20K steel, produced in ordinary open hearth furnaces according to the ordinary technology and produced with treatment by synthetic slag in the ladle. When the new technology was used, various versions of deoxidation were tested. The effectiveness of the versions of the technology tested were compared on the basis of the results of inspection of blooms, evaluation of the macrostructure, determination of the chemical composition of the steel, evaluation of nonmetallic inclusions, and mechanical tests. It is established that the melting of type 20K steel with treatment with synthetic slag, regardless of the deoxidation treatment used, allows the production of pipe skelp with low sulfur content, free of nonmetallic inclusions, with compact macrostructure and high mechanical properties, particularly across the

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APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002203520014-2"

1/2 028 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--SLAG FORMING MIXTURE -U-

AUTHOR-(05)-KUKLEV, V.G., SHALIMOV, A.G., VOINOV, S.G., LUBENETS, I.A., ZHUKOV, O.G.

COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 262,923

REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,

DATE PUBLISHED--04FEB70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--METALLURGIC PATENT, METALLURGIC SLAG, LIQUID METAL, SILICON DIOXIDE, ALUMINUM OXIDE, IRON OXIDE, CALCIUM OXIDE, MAGNESIUM OXIDE, SODIUM OXIDE, POTASSIUM OXIDE, CARBON

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3003/1058 STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0130093

UNCLASSIFIED

2/2 028 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AA0130093

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A SLAG FORMING MIXT. FOR PROTECTING THE SURFACE OF A MOLTEN METAL ALLOY FROM COOLING AND OXIDN. DURING CASTING CONSISTED OF: SIO SUB2 36-50, AL SUB2 O SUB3 25-35, FEO 3-10, CAO 3-9, MGO 1-4, (NA SUB2 O PLUS K SUB2 O) 0.2-4, C 9-15, FLUORITE 1-6, AND NA SUB2 CO SUB3 1-7PERCENT. FACILITY: BARDIN, I. P. CENTRAL SCIENTIFIC RESEARCH INSTITUTE OF FERROUS METALLURGY.

UNCLASSIFIED

USSR UDC 539.12

VINITSKIY, A. KH., VOINOV, V. G., STREL'TSOV, I. S., TAKIBAYEV, ZH. S., Academician of the Academy of Sciences Kazakh SSR, and CHASNIKOV, I. YA., Institute of Nuclear Physics of the Academy of Sciences Kazakh SSR, Alma-Ata

"Characteristics of the Coherent Interaction of π^--Mesons with Emulsion Nuclei at 60 Gev"

Moscow, Doklady Akademii Nauk SSSR, Vol. 194, No. 3, 21 Sep 70, pp 544-546

Abstract: Coherent generation of particles in the interaction of high-energy pions with nuclei is discussed. The startup of the Serpukhov accelerator made it possible to study these processes up to energies of 60-70 Gev. This article discusses three- and five-ray events in a VR-2 photoemulsion found after examining tracks of primary pions over a distance of 870 m. It was found that the cross section for the coherent formation of the system $\pi^+\pi^-\pi^-$ in the final state increases with the energy of the primary particle, while the maximum in the effective mass distribution of this system remains in the same region as for an energy of 17 Gev. A considerable rise in the number of five-particle coherent

USSR

VINITSKIY, A. KH., et al, Doklady Akademii nauk SSSR, Vol. 194, No. 3, 21 Sep 70, pp 544-546

interactions was also found. At 17 Gev the number of events of the reaction

$$\pi^- + A \to \pi^+ + 2\pi^- + 2\pi^0 + A'$$

was 2% of the reaction

$$\pi^- + A \to \pi^- + \pi^+ + \pi^- + A',$$

while at 60 Gev the number of five-particle coherent states was 70% as compared with the number of three-particle states. It is noted that this value may be somewhat high, since the reaction $\pi^- A \to \pi^- \pi^0 \pi^- A'$ was not taken into account.

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USSR UDC 621.791.14:51.001.57

VOINOV, V. P., KANEL', L. S., BEREZINA, Ye. N., and GORDIYENKO, N. I., State Scientific Research Institute of Automobile Transportation

"Use of the Mathematical Programming Method for the Evaluation of the Results of Friction Welding"

Kiev, Avtomaticheskaya Svarka, No 4 (241), Apr 73, pp 19-21

Abstract: The method of mathematical programming, in which the matrix represents a total factorial experiment of 2^n-type, was used to evaluate results of friction welding. From suggested regression functions, the joint influence of principal factors of the process can be evaluated in a wide range of their variation in the friction welding of specimens (16 mm in diam.) from joined steels 20 and 40 Kh and from steel 20; also, optimum parameters of the welding method and maximum values of the impact ductility can be determined for working at normal and low temperatures. To increase the resistivity to brittle failure, a stepped cycle of pressure (heating pressure/peening pressure=5/10) at optimum heating time (t=3 sec) and rotation velocity (n=1200 rpm) must be applied. The impact strength of welded specimens of steel 20 showed satisfactory agreement with calculations from regression functions. Three figures, five formulas, two bibliographic references.
1/1

Nuclear Science and Technology

USSR

UDC 621.039.554

DMITRIYEVSKIY, V. A., VOINOV, Ye. M., and TETEL'BAUM, S. D.

"Using Uranium Hexafluoride in Nuclear Energy Equipment"

Moscow, Atomnaya energiya, Vol 29, No 4, Oct 70, pp 251-255

Abstract: A description is given of a nuclear reactor using UF_6 as nuclear fuel, a reactor which was built more than ten years ago in the Soviet Union. A list of the principal parameters and a diagram showing the structure of the reactor in cross section are given. The first experiments were conducted with UF_6 enriched up to 90% by U^{235}. With the maximum power of the reactor limited by biological security to about 1.5 kW, the neutron flow at the reactor center was $2.7 \cdot 10^{10}$ neutrons/$cm^2 \cdot$sec. A table is given comparing this reactor with the "Enrico Fermi" in which the former is found to have approximately the same parameters, but with the definite advantage that it requires much less -- about one-half -- fissionable material loading. There is also a discussion of the possibilities of using the reactor as a basis for a magnetohydrodynamic reactor, and a diagram of such a system is presented. The authors conclude by cautioning that regardless of how attractive the idea of using UF_6 may sound, only one such reactor has been brought to practical realization.

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USSR

UDC [537.226+537.311.33]:[537+535]

BAZAKUTSA, V. A., VOINOVA, L. G., ROGACHEVA, YE. I., and DEMBOVSKIY, S. A.

"Electrophysical Properties and Structures of Some Indium and Thallium Tellurides in Thin Layers"

V sb. Tonkiye plenki soyedineniy tellura s metallami podgrupp tsinka i galliya (Thin Films of Tellurium Compounds With Metals of Zinc and Gallium Subgroups -- Collection of Works), Vil'nyus, 1970, p 111 (from RZh-Fizika, No 10, Oct 71, Abstract No 10YE760 by authors)

Translation: Thin layers of $TlSeTe_2$ were obtained by thermal evaporation in vacuum. Amorphous layers of condensate were obtained by deposition on cold substrates. Heat treatment of amorphous films of $TlSbTe_2$ in vacuum at $T=350^{\circ}$ K resulted in their crystallization. The authors studied the following basic electrophysical parameters of amorphous and polycrystalline layers of $TlSbTe_2$: specific conductivity, Seebeck coefficient, concentration and sign of current carriers, thermal activation energy. Transmission and reflection of amorphous and polycrystalline layers of $TlSbTe_2$ in the spectral range from 0.7-15 microns were measured. The effective mass of current carriers was calculated according to IR reflection spectra. In_2Te_3 films were obtained by cathode sputtering of the initial semiconductor in an Ar atmosphere. The

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USSR

BAZAKUTSA, V. A., et al., Tonkiye plenki soyedineniy tellura s metallami podgrupp tsinka i galliya, 1970, p 111

structure and following basic electrophysical parameters of films were studied: specific conductivity, Seebeck coefficient, concentration and sign of current carriers, energy gap.

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1/2 037 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--PLASTIC DEFORMATION OF CORUNDUM SINGLE CRYSTALS -U-

AUTHOR-(05)-KLASSENNEKLYUDOVA, M.V., GOVORKOV, V.G., URUSOVSKAYA, A.A., VOINOVA, N.N., KOZLOVSKAYA, E.P.

COUNTRY OF INFO--USSR

SOURCE--PHYSICA STATUS SOLIDI, 1970, VOL 39, NR 2, PP 679-688

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS, EARTH SCIENCES AND OCEANOGRAPHY

TOPIC TAGS--PLASTIC DEFORMATION, SINGLE CRYSTAL, CORUNDUM, RUBY, SAPPHIRE, CRYSTALLOGRAPHY, RESEARCH FACILITY, CHROMIUM IMPURITY, CRYSTAL IMPURITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/0337 STEP NO--GE/0030/70/039/002/0679/0688

CIRC ACCESSION NO--AP0124094

UNCLASSIFIED

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002203520014-2"

2/2 037 UNCLASSIFIED PROCESSING DATE--20NOV70

CIRC ACCESSICN NO--AP0124094

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE STRESS STRAIN CURVES AND THE DEFECT STRUCTURE OF CORUNDUM SINGLE CRYSTALS (SAPPHIRE AND RUBY) WERE STUDIED. THE INFLUENCE OF IMPURITY (CR) PRESENCE, CRYSTALLOGRAPHIC ORIENTATICN, TEMPERATURE, AND DEFORMATICN RATE WAS INVESTIGATED. CHROMIUM MAKES CORUNDUM HARDER AND CAUSES A YIELD POINT PHENOMENON. THE YIELD PCINT WAS ALSO INCREASED BY THE TRANSITION FROM 60DEGREES TO 90DEGREES ORIENTATION OF THE SPEICIMENS, BY LOWERING THE TEMPERATURE, AND BY AN INCREASE IN THE DEFORMATICN RATE. IN 60DEGREES SPECIMENS THE DEFORMATION OCCURS BY MEANS OF GLIDING ON BASAL PLANES IN (1120) AND (1010) DIRECTIONS. IN 90DEGREES SAMPLES BESIDE THIS ONE GLIDING IN (1010), (1011), (2021) AND (2243) IS FOUND. FACILITY: INSTITUTE OF CRYSTALLCGRAPHY OF THE ACADEMY OF SCIENCES OF THE USSR, MOSCOW.

UNCLASSIFIED

1/2 022 UNCLASSIFIED PROCESSING DATE--13NOV70

TITLE--OBSERVATION OF THE SUPPRESSION OF THE INELASTIC CHANNEL OF A NUCLEAR REACTION IN RESONANT NUCLEAR SCATTERING OF GAMMA RAYS IN A

AUTHOR-(04)-VOITOVETSKIY, V.K., KORSUNSKIY, I.L., NOVIKOV, A.I., PAZHIN, YU.F.

COUNTRY OF INFO--USSR

SOURCE--JETP LETTERS (USA), VOL. 11, NO. 3, P. 149-53 (FEB. 1970)

DATE PUBLISHED----FEB70

SUBJECT AREAS--NUCLEAR SCIENCE AND TECHNOLOGY, PHYSICS

TOPIC TAGS--NUCLEAR RESONANCE, NUCLEAR REACTION, NUCLEAR SCATTERING, GAMMA RAY, SINGLE CRYSTAL, TIN ISOTOPE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3005/1788 STEP NO--US/0000/70/011/003/0149/0153

CIRC ACCESSION NO--AP0133693

UNCLASSIFIED

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002203520014-2"

2/2 022 UNCLASSIFIED PROCESSING DATE--13NOV70
CIRC ACCESSION NO--AP0133693
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TO OBSERVE THE EFFECT OF THE NUCLEAR REACTION CHANNEL SUPPRESSION FOR THE CASE WHEN NUCLEAR RESONANT SCATTERING IS DECISIVE, ALSO TO INVESTIGATE ALL THE POSSIBLE MECHANISMS OF WAVE FIELD FORMATION LEADING TO THE SUPPRESION OF THE INELASTIC CHANNELS IN THE CRYSTAL, THE AUTHORS HAVE PERFORMED AN EXPERIMENT WITH A PERFECT TIN SINGLE CRYSTAL CONTAINING 88PERCENT SN PRIME119 (MAGNITUDE OF F SUBNUC PRIME GREATER THAN F SUBE IN A CRYSTAL WITH THIS SN PRIME119 CONTENT).

UNCLASSIFIED

USSR UDC: 621.373.52:621.373.42

VOKHMYAKOV, Yu. S., CHELNOKOV, O. A.

"On Asynchronous Excitation of a Transistorized High-Frequency Self-Excited Oscillator"

V sb. Poluprovodn. pribory v tekhn. elektrosvyazi (Semiconductor Devices in Technical Electrical Communications--collection of works), Moscow, "Svyaz'", 1970, pp 82-92 (from RZh-Radiotekhnika, No 1, Jan 71, Abstract No 1D332)

Translation: The authors analyze processes in a high-frequency transistorized self-excited oscillator in the case of a sinusoidal voltage between base and emitter which is asynchronous with respect to the natural oscillations. It is shown that the phase of the mean transconductance of the transistor depends on the amplitude of the asynchronous voltage. In this regard, actuation of the asynchronous voltage may cause self-excited oscillations even when the rest point of the free oscillator lies in the active region of the transistor. Nine illustrations, bibliography of ten titles. Resumé.

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USSR

UDC 681.327

VOKHRYSHEV, V. Ye., KOZHEVMIKOV, I. M., and SYROCHEVA, N. M.

"Pneumatic Bypass Device"

USSR Author's Certificate No 275516, Filed 24/03/69, Published 15/10/70
(Translated from Referativnyy Zhurnal Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 5, 1971, Abstract No 5B477P)

Translation: This invention relates to computer technology and can be used in logic control machines, centralized control devices, and other computers made of pneumatic automation elements. Pneumatic bypass devices are known, consisting of standard one-cycle pulse delay circuits. However, these devices have a constant predetermined number of outputs. This does not allow them to be used to solve a number of problems in which the number of outputs of the bypass device must be changed during the operating process, either automatically or from the control board. The pneumatic bypass device suggested contains series-connected delay units for each input and OR element and differs in that in order to allow the bypass cycle to be changed, each stage (except for the last stage) contains a tube and a 3-membrane relay connected as a blocking circuit. The first inputs of the elements connected

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002203520014-2"

USSR

VOKHRYSHEV, V. Ye., et al., USSR Author's Certificate No 275516, Filed 24/03/69, Published 15/10/70 (Translated from Referativnyy Zhurnal Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 5, 1971, Abstract No 5B477P)

in the blocking circuit in each stage (except for the first stage) are connected to the output of the blocking element in the preceding stage. This output is also connected to the erasing input of the one-cycle delay unit in its own stage. The blocking inputs of the tubes are connected to the output tube of the device within each digit. The outputs of all tubes are connected to the inputs of an OR element; the second inputs of all tubes, like the blocking inputs of the blocking elements, are connected to the corresponding channels for supplying instructions to change the bypass cycle, while the input of the blocking element in the first stage is connected to the input for the cycle pulses. This allows the number of bypass cycles to be changed by input of external instructions, which expands the capabilities. 1 fig.

2/2

USSR

UDC 669.35'5:539.4.014.11:629.1.037

VOL, A. YE., SOLDAKOVA, I. A., CHIZHIKOV, G. I.

"Determination of the Residual Stresses in Brass Propellers"

V sb Metallovedeniye (Physical Metallurgy -- collection of works), Sudostroyeniye Press, No 15, Leningrad, 1971, pp 163-168 (from RZh-Metallurgiya, No 4, Apr 72, Abstract No 4I663)

Translation: Basic results from determining the residual stresses in natural propellers made of LMtsZh55-3-1 brass are discussed. It was established that in the manufacture and repair of propellers, significant residual stresses can result from the application of certain technological operations. The presence of these stresses can lead to breaking of the propeller vanes during operation. The conclusion was drawn to the necessity for complete heat treatment of propellers made of LMtsZh55-3-1 brass even if they are not subjected to welding or surfacing during the production process. Four illustrations and a 2-entry bibliography.

1/1

USSR UDC 669.35.71.1.24.6.782.71.620.193.27(088.8)

VOL, A. Ye., GAYDAY, P.I., GORYNIN, I. V., KAPYRIN, G. I., KUZNETSOV, Ya. Ya., PROKOF'YEV, S. N., SUMINOV, N. S., CHIZHIKOV, G. I., SHUMSKIY, K. A.

"Copper-Based Alloy"

USSR Author's Certificate, No. 276417, Filed 27/10/67, Published 16/10/70. (Translated from Referativnyy Zhurnal Metallurgiya, No. 5, 1971, Abstract No. 5 I713P).

Translation: An alloy with increased corrosion-fatigue strength in sea water is suggested. The composition of the alloy (%) is: Al 7-9, Mn 8-12, Fe 2-4, Ni 1.5 - 4, Sn 0.1-05, Si 0.1-0.5, remainder - Cu. The technological properties of the alloy can be improved by introducing up to 0.3 % Mg and up to 0.2 % Be. These additions decrease the tendency of the alloy toward film formation. The alloy has (in kg/mm^2) $\sigma_b \geq 65$, $\sigma_{0.2} \geq 30$, HB 180-210, $\sigma_{-1} \geq 17$ at $10 \cdot 10^6$ cycles and is a promising shipbuilding material.

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USSR

UDC: 621.398.08

VOL, V. A.

"Estimating the Improvement in Noise Immunity by Integration with the Weight of Code Pulses"

Tr. metrol. in-tov SSSR (Transactions of the Metrological Institutes of the USSR) No 126(186), 1971, pp 174-178 (from RZh-Avtomatika, telemekhanika i vychislitel'naya tekhnika, No 12, 1971, Abstract No 12A208)

Translation: An estimate is made of the gain in signal/noise ratio, by using a method of integration with the weight of code pulses for receiving coded messages in normal white noise as compared to the method of integral reception, and of the effect of the synchronization channel instability on the noise immunity of such a system. It is shown that integration with weight, depending on the form of the code pulse, begins to compare unfavorably with ordinary integration when the square of the code pulse autocorrelation function is equal to the average power of the code pulse over the square of its area in the interval considered. It follows from this analysis that the use of integration in accordance with the

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USSR

VOL, V. A., Tr. metrol. in-tov SSSR, No 126(186), 1971, pp 174-178

weight of the code pulses permits improvement of the noise immunity of telemetric systems using any form of pulse modulation without complicating them more than the integral reception system. Three illustrations, bibliography of 11. P. S.

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USSR

UDC 534.83

VOL, V. S.

"Statistics of Pauses in Russian Active Speech"

V sb. Materialy Nauch.-tekhn. konf. Leningr. elektrotekhn. in-ta svyazi. Vyp. 3 (Materials of the Scientific-Technical Conference of Leningrad Electrical Engineering Institute of Communication. No. 3 -- Collection of Works), Leningrad, 1971, pp 265-268 (from RZh-Fizika, No 3, Mar 72, Abstract No 3Zh586)

Translation: The concept of active speech is defined and involves the input speech signal of a dictaphone. The results of an experimental study of the distribution of the lengths of pauses in Russian active speech are presented. Resume.

1/1

USSR UDC 553.41(571.56+571.65)

VOLAROVICH, G. P., MIKHAYLOVA, M. S., and EPSHTEYN, YU. A., Central Scientific Research Institute of Prospecting for Nonferrous, Rare and Noble Metals

"Reconnaissance and Evaluation Criteria for Near-Surface Gold-Ore Deposits"

Moscow, Razvedka i Okhrana Nedr, No 8, Aug 73, pp 1-4

Abstract: The article deals with magmatic, mineralogical, structural, geochemical, and geomorphological criteria for the prospecting and evaluation of near-surface gold-ore deposits associated with young volcanic belts of the eastern regions. It is recommended that a complex of prospecting and evaluation methods are used, including determination of the geologic structure on the basis of the interpretation of large-scale aerial photos, for the study of near-surface gold deposits. 5 references.

1/1

USSR

UDC: 622.001.43

VOLAROVICH, M. P., TOMASHEVSKAYA, I. S.

"On the Velocities of Elastic Waves When Rock Specimens are Deformed and Destroyed by Uniaxial Compression at Hydrostatic Pressures of up to $10,000 \cdot 10^5$ K/m^2"

V sb. Probl. reologii gorn. porod (Problems of the Rheology of Rocks--collection of works), Kiev, "Nauk. dumka", 1970, pp 38-41 (from RZh-Mekhanika, No 9, Sep 70, Abstract No 9V680)

Translation: The paper describes a high-pressure installation in which tests may be conducted on compression and on measuring the velocities of ultrasonic longitudinal waves along and across the application of a uniaxial load, as well as determining the axial force and longitudinal deformation of a specimen in the course of an experiment using resistance strain gauges. Bibliography of six titles. Authors' abstract.

1/1

1/2 011 UNCLASSIFIED PROCESSING DATE--16OCT70

TITLE--STUDY OF THE PROPERTIES OF MOISTURE SORBED ON PEAT BY CALORIMETRY AND NMR SPECTROSCOPY -U-

AUTHOR-(04)-VOLAROVICH, M.P., GAMAYUNOV, N.I., YEODOKIMOV, B.V., KHORKOVA, M.O.

COUNTRY OF INFO--USSR

SOURCE--KOLLOIDNYY ZHURNAL, 1970, VOL 32, NR 2, PP 182-188

DATE PUBLISHED-------70

SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY

TOPIC TAGS--MOISTURE MEASUREMENT, HYDROGEN BONDING, SOIL WATER, CALORIMETRY, NMR SPECTRUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1993/0394 STEP NO--UR/0069/70/032/002/0182/0188

CIRC ACCESSION NO--AP0113312

UNCLASSIFIED

2/2 011 UNCLASSIFIED PROCESSING DATE--16OCT70
CIRC ACCESSION NO--AP0113312
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PROPERTIES OF SORBED MOISTURE ON PEAT HAVE BEEN STUDIED BY CALORIMETRY AND NMR SPECTROSCOPY. THE STUCTURE OF SORBED MOISTURE IS CHARACTERIZED BY DISORDERED WATER MOLECULES BOUND BY HYDROGEN BONDS. THE STRUCTURE OF OSMOTIC MOISTURE ALSO DIFFERS FROM THAT OF PURE WATER. THE AMOUNT OF CATIONS SORBED BY PEAT AFFECTS THE EVAPORATION HEAT AND MOBILITY OF WATER MOLECULES.

UNCLASSIFIED

Acc. Nr.: AP0045878 V

Ref. Code: UR0387

JPRS 52054

Rock Density at High Pressures

(Abstract: "Study of Density of Rocks from Central Kazakhstan Under High Pressures," by M. P. Volarovich, A. K. Kurskeyev, A. I. Levykin, I. S. Tomashevskaya, I. L. Tuzova and B. M. Urazayev, Institute of Physics of the Earth, Academy of Sciences USSR, and Institute of Geological Sciences, Academy of Sciences Kazakh SSR; Moscow, Izvestiya Akademii Nauk SSR, Fizika Zemli, No. 1, 1970, pp. 46-51)

The density of rocks of various composition from Central Kazakhstan was determined at high pressures in the laboratory. Rock tests were at quasihydrostatic pressures up to 15 kb. The apparatus used made it possible to measure the velocities of elastic waves. The sample was compressed by hard-alloy pistons. Change in volume (from displacement of the piston) was determined simultaneously with measurements of the velocity of longitudinal waves. Change in density at different pressures was computed using the formula

$$\rho = \frac{\rho_0}{1 - \Delta V/V},$$

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Reel/Frame
19780902

12

where ρ_0 is the initial density of the sample in g/cm^3, $\Delta V/V$ is the volume decrement. Change in density was determined with an error of about 5 percent. Samples were selected along two deep seismic sounding profiles. Under the applied pressure density of all rocks increased. Density changes were greatest in the initial phase to 4 kb. Later the changes became less and the density-pressure curves flattened out. The greatest density changes were observed in samples of ancient metamorphosed rocks: schists, gneisses and porphyroids of more acidic composition for which the density changes at 15 kb attain 3.5 percent. The density of granites also changes rather sharply and increases continue to 15 kb. Relative density changes are dependent on initial density: the lesser the density at atmospheric pressure, the greater is the change when pressure is applied. The maximum changes in density for rocks of acidic composition are evidently caused by their greater inhomogeneity than for rocks of basic composition. Acidic rocks are also poorly preserved. Defects in the rock, largely microfissures, close under pressure and density at the attained pressures approaches an identical value for rocks of similar composition. For rocks of basic and ultrabasic composition the density change at pressures up to 15 kb does not exceed 2 percent, that is, the compressibility of rocks of acidic composition is greater than for basic

rocks by approximately a factor of 1.5. Density is dependent primarily on chemical and mineralogical composition. Differentiation of rocks by density corresponds to their basicity. The density of sandstones at high pressures approaches the density of granodiorites. Tuff-diorites approach the density of diorites. The density of eclogites from northern Kazakhstan is less than the density of eclogites from other regions. The low density of eclogites in northern Kazakhstan can be attributed to the fact that they contain quartz (up to 15-20 percent). The results of studies of rock densities at high pressures can be used in the geological interpretation of geophysical data. The authors used such data in constructing a density cross section of the crust in central Kazakhstan.

19780904

Acc. Nr: AP0036184 Ref. Code: UR 0069

PRIMARY SOURCE: Kolloidnyy Zhurnal, 1970, Vol 32, Nr 1, pp 38-3[illegible]

CHARACTERISTIC OF THE COALESCENCE KINETICS OF DROPS AT THE LIQUID-LIQUID INTERFACES

Volarovich, M. P.; Avdeyev, N. Ya.

Summary

An analytical method of obtaining a statistical characteristic of the coalescence kinetics of drops at liquid-liquid interfaces from minimum experimental data is considered. The calculated and experimental determinations of the coalescence kinetics of benzene and other substances are shown to be in good agreement.

D. n.

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REEL/FRAME
19721003

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1/2 052 UNCLASSIFIED PROCESSING DATE--13NOV70

TITLE--HEAT RESISTANCE VACUUM BALL BEARINGS -U-

AUTHOR--VOLBROM, B.A.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, VESTNIK MASHINOSTROYENIYA, NO 2, 1970, PP 11-13

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--HIGH TEMPERATURE EFFECT, VACUUM TECHNOLOGY, BALL BEARING, HEAT RESISTANT MATERIAL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3003/1865 STEP NO--UR/0122/70/000/002/0011/0013

CIRC ACCESSION NO--AP0130692

UNCLASSIFIED

2/2 052 UNCLASSIFIED PROCESSING DATE--13NOV70
CIRC ACCESSION NO--AP0130692
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DESCRIPTIONS ARE GIVEN OF THE DESIGN, MATERIAL, AND RANGE OF USE OF ROLLER CONTACT BEARINGS WORKING UNDER CONDITIONS OF A VACUUM AND ELEVATED TEMPERATURES. A NEW SEPARATOR BEARING DESIGN IS PRESENTED. RESULTS ARE GIVEN OBTAINED BY THE COMPARATIVE TESTING OF BEARINGS WITH VARIOUS SEPARATORS. ORIGINAL ARTICLE HAS TWO TABLES, ONE ILLUSTRATION, AND SIX BIBLIOGRAPHIC ENTRIES.

UNCLASSIFIED

1/2 012 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--NA, CS, AB PARALLEL TO CL SYSTEM -U-

AUTHOR-(03)-LAGUTOVA, R.P., ILYASOV, I.I., VOLCHANSKAYA, V.V.

COUNTRY OF INFO--USSR

SOURCE--ZH. NEORG. KHIM. 1970, 15(5), 1429-30

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--SOLID SOLUTION, CESIUM CHLORIDE, RUBIDIUM CHLORIDE, PHASE DIAGRAM, INPURITY LEVEL, SODIUM CHLORIDE, CHEMICAL STABILITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/1397 STEP NO--UR/0078/70/015/005/1429/1430

CIRC ACCESSION NO--AP0135071

UNCLASSIFIED

2/2 012 UNCLASSIFIED PROCESSING DATE--13NOV70
CIRC ACCESSION NO--AP0135071
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE STABILITY OF BINARY SOLID SOLNS. OF THE TITLE SYSTEM UNDER THE EFFECT OF A 3RD COMPONENT (NACL) WAS DETD. A PHASE DIAGRAM OF 7 CROSS SECTIONS OF THE SYSTEM IS CONSTRUCTED. FACILITY: ROSTOV.-NA-DONU FILIAL ZACCH. INST. SOV. TORG., ROSTOV-ON-DON, USSR.

UNCLASSIFIED

USSR

UDC: 621.315.592

KORSUNSKIY, M.I., VOLCHEK, A.D., and KLIMENKO, V.V.

"Quantum Output in the Long-Lasting Trapping of Carriers as a Function of the Spectrum"

Alma-Ata, Izvestiya AN KazSSR, Seriya Fiziko-Matematicheskaya, No 6, 1970, pp 45-49

Abstract: The quantity β', representing the quantum output, is a function of the photoelectric energy h , where h is Planck's constant and ν the frequency of the incident radiation. The purpose of this paper is to define precisely the function $\beta'(h\nu)$ and thus to establish the relative position of the energy level for a long-lasting trap and for amorphous selenium. By calculating various values for β_0' from the equation

$$\beta_0'(h\nu) = \beta'(h\nu)/\beta'(h\nu_0),$$

where β_0' is the relative value of the quantum output and ν_0 is a standard frequency, the authors plot the common logarithm of β_0' as a function of ν. They conclude that there are two channels through which the carrier can enter the trap: by tunneling through the barrier at the level of the conducting zone floor; by tunneling through the barrier at the energy level E_c', the nature of which is not known but is quantitatively indicated in a diagram accompanying the article.

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USSR UDC 621.315.592

KORSUNSKIY, M. I., Academician of the Academy of Sciences, Kazakh SSR, VOLCHEK, A. D., KLIMENKO, V. V., Institute of Nuclear Physics, Academy of Sciences, Kazakh SSR

"The Spectral Dependence of the Quantum Yield for the Process of Casting Electrons into Y-Centers in Activated Films of Amorphous Selenium"

Moscow, Doklady Akademii Nauk SSSR, Vol 196, No 3, 1971, pp 565-566

Abstract: The aim of the article is to ascertain whether the values of the probability of penetration of the electron into the Y-center and of the lifetime of an electron excited by a light quantum are functions of the light-quantum energy. It is found that the probability of penetration of the electron into the Y-center and the lifetime of an electron excited by a light quantum either do not change at all with energy, or change very little. Consequently, electrons excited by light quanta with energies greater than 2.2 ev penetrate into the Y-centers through a specific energy level, which apparently is the bottom of the conductivity zone of selenium. One figure, 11 bibliographic entries.

1/1

USSR

UDC 678.674:678.01.002.2

GORYAINOVA, A. V., VOLCHEK, A. M., Candidates of Technical Sciences

"Pentaplast--a New Polymeric Material for Chemical Machine-Building"

Moscow, Khimicheskoye i Neftyanoye Mashinostroyeniye, No 9, Sep 71, pp 23-24

Abstract: The article describes results of a study performed at NIIkhimmash /All-Union Scientific Research and Design Institute of Chemical Machine-Building/ on the properties of the new chlorinated polyester (Pentaplast) and processing methods for the fabrication of chemical equipment parts and assemblies from it. The physicomechanical properties of Pentaplast were studied on sample strips cut from heated sheets (extrusion sheet obtained at "Plastpolimer" NPO /expansion unknown/ Leningrad; pressed sheet obtained by pressing on standard presses with the addition of 5 percent Cr_2O_3). A study was made of the chemical stability of pentaplast in various corrosive environments. Welding is done with hot air, by means of the torch used in vinyl-plastic welding.
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GORYAINOVA, A. V., et al, Khimicheskoye i Neftyanoye Mashinostroyeniye, No 9, Sep 71, pp 23-24

Optimum welding temperature 315°C. It is recommended that welding rods 2, 3, 4 mm in diameter, made by the extrusion method, be used. Stamping of chemical equipment parts from Pentaplast should be carried out by the ordinary method used for thermoplastics, with sheet Pentaplast preheated to 150-160°C. Standard casting machines can be used for the casting of Pentaplast. The temperature in the heated chamber should not exceed 190-210°C. "B" brand Pentaplast is used with the addition of 5 percent chromic oxide to reduce brittleness of the products. NIIemal'khimmash [expansion unknown; possibly All-Union Scientific Research and Design Institute of Enamel Chemical Machine-Building] has mastered the technique of applying powdered Pentaplast in an electrostatic field to parts (housing, rotor) of the TV-600 three-column centrifuge.

2/2

1/2 023 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--AGING OF POLYPROPYLENE IN NITRIC ACID -U-

AUTHOR-(03)-VOLCHEK, A.M., BOKSHITSKIY, M.N., KLINOV, I.YA.

COUNTRY OF INFO--USSR

SOURCE--PLAST. MASSY 1970, (3), 37-9

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS, CHEMISTRY

TOPIC TAGS--THERMAL AGING, POLYPROPYLENE, NITRIC ACID

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1997/0662 STEP NO--UR/0191/70/000/003/0037/0039

CIRC ACCESSION NO--AP0119570

UNCLASSIFIED

2/2 023 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0119570

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE AGING OF CRYST. POLYPROPYLENE (I) (DEGREE OF CRYSTALLINITY 50PERCENT) IN 10-80PERCENT HNO SUB3 WAS STUDIED AT 20-100DEGREES FOR 1800 HR (AT EACH EXPTL. TEMP.). THE AGING KINETICS ARE DISCUSSED. SEVERAL EQUATIONS WERE DERIVED ANAL. FOR THE CALCN. OF I DURABILITY (TAU) AND MAX. ACID CONCN. AT WHICH THE POLYMER RETAINED ITS BASIC FUNCTIONS FOR A CERTAIN PERIOD OF TIEM. TWO NUMERICAL EXAMPLES FOR THE CLACN. OF TAU AND MAX. ACID CONCN. ARE PRESENTED.

UNCLASSIFIED

USSR

UDC 531.731.2.087.92

VOLCHEK, A. V., SHMEL, O. S., Engineers

"Characteristics of Strain Gages Made of Monocrystalline Silicon of Various Specific Resistances"

Moscow, Pribory i Sistemy Upravleniya, No 2, 1972, pp 36-38

Abstract: A study was made of the characteristics of strain gages made from p-type silicon with a specific resistance ρ equal to 0.02, 0.01 and 0.005 ohms-cm designated KM, KMA and KMB, respectively. The experimental procedures and results are presented for determining the sensitivity of the strain gages to deformation, the dependence of the sensitivity on temperature, the temperature increment of the resistance, and the dependence of the relative variation of the resistance on deformation. Technical specifications are presented for the tested silicon strain gages of both rod and π-type configuration. The KMA and KMB strain gages made from low-resistance silicon (ρ = 0.01 and 0.005 ohms-cm) have less sensitivity dependence on temperature and better linearity of the dependence of the relative resistance variation on deformation than KM type strain gages made of ordinary silicon with a specific resistance of 0.02 ohms-cm.

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Rubber and Elastomers

USSR UDC 678.049.002.612

LITVINOVA, T. V., VOL'CHENKO, R. L., and TOLSTUKHINA, F. S.

"New Plasticizer for Cold Resistent Rubbers"

Moscow, Kauchuk i Rezina, No 12, 1972, pp 26-28

Abstract: The nature of the plasticizer is important in producing cold resistance in rubbers. The ester plasticizers usually used are limited by high cost, lack of starting materials, and high volatility. Other plasticizers have lower volatility, but cannot produce the needed cold resistance. A Possible solution to this problem lies in the use of a new ester plasticizer, using synthetic monobasic fatty acids(SFA) which are readily available on a large scale from oil refineries from the oxidation of paraffins. Synthesis of these new plasticizers was realized in one instance with diethylene glycol and SFA of various fractions (from C_5-C_6 to C_{10}-C_{11}) and in another instance by esterification of a SFA fraction with various alcohols. The effectiveness of these new plasticizers was estimated by comparing the magnitude of the cold resistance coefficients of standard butadienenitrile and nairit B vulcanized rubbers. The maximum coefficient of cold resistance was obtained from SFA fraction C_7-C_9. Plasticizers with normal alcohols, were much more effective

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LITINOVA, T. V., et al., Kauchuk i Rezina, No 12, 1972, pp 26-28

than those of branched alcohols, with diethylene glycol producing optimal results. The ester from the SFA fraction C_7-C_9 and diethylene glycol is called LZ-7. It is much less volatile than commonly used esters(dibutyl sebacate and dibutyl phthalate). In conditioned cold resistance LZ-7 is close to dibutyl sebacate and surpasses dibutyl phthalate. A definite correlation between the effectiveness of plasticizer action and the degree of change in its viscosity with a lowering of temperature was demonstrated, with LZ-7 showing an insignificant change in its viscosity with a lowering of temperature. The effectiveness of ester LZ-7 was confirmed with resins from both polar and nonpolar rubbers used in production of various rubber materials, in which LZ-7 surpasses dibutyl phthalate and is close to dibutyl sebacate.

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USSR UDC 621.791.052.004.12:562.012.7

VOLCHENKO, V. N., Candidate of Technical Sciences, MSLOV, B. G., Engineer (Moscow Higher Technical School imeni N. E. Bauman), and VOLKOV, A. S., Candidate of Technical Sciences (Podol'sk Machine Building Plant imeni S. Ordzhonikidze)

"Use of Statistical Method in Testing Its Welding Quality"

Moscow, Svarochnoye Proizvodstvo, No 11, Nov 70, pp 35-37

Abstract: A transition must be made from passive rejection of unsuitable products to active control of production quality. One means of organizing this transition is statistical testing of products. It allows rejects to be prevented and helps to increase the culture of production systematically. The system and indicators used to consider the defect rate of welded seams by types of defects and corrections for them as a function of the parameters influencing welding quality can be used with production testing of products both by destructive and by nondestructive methods. Its use requires the development of special types of test documentation considering both the results of testing and the principal parameters of welding

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USSR

VOLCHENKO, V. N., et al., Svarochnoye Proizyvodstvo, No 11, Nov 70, pp 35-37

technology. This allows the causes of rejects to be determined and measures to be developed to prevent them. Methods of mathematical statistics are described allowing the stable (mean) level of rejection of welded products to be determined for each type of production condition.

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1/2 029 UNCLASSIFIED PROCESSING DATE--11SEP70
TITLE--CLASSIFICATION OF WELDING PROCESSES -U-

AUTHOR--VOLCHENKO, V.N.

COUNTRY OF INFO--USSR

SOURCE--AVTOMAT. SVARKA, JAN. 1970, 23(1) 32-38

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--CARBON STEEL, THERMODYNAMICS, WELDING TECHNOLOGY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1989/1210 STEP NO--UR/0125/70/023/001/0032/0038

CIRC ACCESSION NO--AP0107686
UNCLASSIFIED

2/2 029 UNCLASSIFIED PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0107686

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A GENERAL FORM OF CLASSIFICATION FOR VARIOUS TYPES OF WELDING PROCESSES IS PROPOSED. IN THIS CLASSIFICATION, WELDING IS CONSIDERED AS AN IRREVERSIBLE THERMODYNAMIC PROCESS ASSOCIATED WITH LOCAL CHANGES OF ENERGY AND CHANGES IN THE STATE OF THE SUBSTANCES INVOLVED. THUS WELDING PROCESSES MAY BE CONVENIENTLY CLASSIFIED ON AN ENERGY BASIS; EXAMPLES OF THIS PRINCIPLE ARE PRESENTED. ON THE BASIS OF THIS CLASSIFICATION, FORMS OF WELDING BEST SUITED TO SPECIFIC GASES, E.G., THE WELDING OF C STEEL PLATES OR RODS, MAY BE DETERMINED.

UNCLASSIFIED

1/2 046 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--IONIZATION AGING OF A POLYETHYLENE FILM -U-

AUTHOR-(04)-BAGIROV, M.A., MALIN, V.P., GAZARYAN, YU.N., VOLCHENKOV, E.YA.

COUNTRY OF INFO--USSR

SOURCE--PLAST. MASSY 1970, (2), 44-6

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--IONIZATION, POLYETHYLENE, DIELECTRIC PERMEABILITY, IR SPECTRUM, SPECTROSCOPIC ANALYSIS, CHEMICAL BONDING, SURFACE PROPERTY, OXIDATION, MATERIAL DEGRADATION, PLASTIC FILM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1992/1702 STEP NO--UR/0191/70/000/002/0044/0046

CIRC ACCESSION NO--AP0112696

UNCLASSIFIED

2/2 046 UNCLASSIFIED PROCESSING DATE--27NOV70
CIRC ACCESSION NO--AP0112696
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. POLYETHYLENE (I) FILMS (55 MU THICK) WERE SUBJECTED TO ELEC. DISCHARGES AT A VOLTAGE OF 7-11 KV (UNDER N OR AIR) AND THE RESULTING CHANGES IN DIELEC. LOSS FACTOR (TAN DELTA), DIELEC. PERMEABILITY (EPLISON), BREAKDOWN STRENGTH (E), AND THICKNESS (H) WERE RECORDED. IONIZATION AGING CAUSED A LINEAR DECREASE IN E AND H (THE RATE OF DECREASE BEING PROPORTIONAL TO THE VOLTAGE APPLIED), AND A DECREASE IN EPLISON. A PLOT OF TAN DELTA VS. TEMP. REVEALED A NEW DOMAIN OF LOSSES AT 20-80DEGREES, PRESUMABLY DUE TO THE PRESENCE OF LOW MOL. WT. COMPDS. IR SPECTRA OF AGED I FILMS (IN AIR) HAD ABSORPTION BANDS CHARACTERISTIC OF OH GROUPS AND C:C DOUBLE BONDS AT 3200-600 AND 1640 CM PRIME NEGATIVE1, RESP. AN EQUATION WAS DERIVED FOR THE CALCN. OF THE NO. OF OXIDIZED UNITS IN I. IONIZATION AGING CAUSED CHEM. CHANGES IN A RELATIVELY THIN SURFACE LAYER OF I FILMS.

UNCLASSIFIED

USSR UDC: 681.3.06:51

KUZIN, L. T., PREOBRAZHENSKIY, A. B., VOLCHENKOV, N. G.

"A Methematical Model for Construction of a Certain Class of Three-Dimensional Structures"

V sb. Inzh.-mat. metody v fiz. i kibernet. (Engineering-Mathematics Methods in Physics and Cybernetics--collection of works), Moscow, Atomizdat, 1971, pp 38-44 (from RZh-Kibernetika, No 11, Nov 71, Abstract No 11V845)

Translation: The paper deals with a method of creating a grammar for propositions which will be descriptions of possible three-dimensional structures of a certain class. A fairly extensive class of structural elements made up of parts from an Erector Set is considered. The terminology vocabulary is made up of the symbols used to code the various parts which occupy a given position in the preselected coordinate system. The following assumptions are made with respect to the coordinates and the arrangement of the parts: 1) only discrete, whole-number values of the coordinates of objects are considered; 2) all parts with the sole exception of type l (flat plates) are arranged in such a way that their edges are parallel to the coordinate axes; 3) a part of type l is arranged in such a way that its

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KUZIN, L. T. et al., Inzh.-mat. metody v fiz. i kibernet., Moscow, Atomizdat, 1971, pp 38-44

plane is parallel to one of the three planes of the Cartesian coordinate system, and oreintation in the given plane has one of 12 different values. V. Mikheyev.

USSR

UDC 535.34:539.213.27

ABDULLAYEV, G. B., [illegible], SH. V., ABUTALYBOVA, Z. N., IBRAGIMOV, N. I., and [redacted], Institute of Physics, Academy of Sciences Azerbaydzhan SSR

"On Some Peculiarities of IR Absorption of Amorphous Selenium"

Baku, Izvestiya Akademii Nauk Azerbaydzhanskoy SSR, Seriya Fiziko-Tekhnicheskikh i Matematicheskikh Nauk, No 4, 1971, pp 100-113

Abstract: [illegible] undertook to elucidate those peculiarities of the selenium IR [illegible] related to its preheat treatment. The initial [illegible] selenium, purity 99.9999 percent (V-5). Three [illegible] viz, (1) from V-5 selenium evacuated to $p \leq 10^{-5}$ [illegible] with 0.05 mol. percent I_2, and (3) from se[illegible] Cl. All samples underwent heat treatment in the [illegible] display bands at 3.5, [illegible], 9.0, 13.5, 16.0, 20.4 [illegible] on $T_{[illegible]}$, with the 20.4-micron band strongest, 13.5

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USSR

ABDULLAYEV, G. B., et al., Izvestiya Akademii Nauk Azerbaydzhanskoy SSR, Seriya Fiziko-Tekhnicheskikh i Matematicheskikh Nauk, No 4, 1971, pp 100-113

medium strong, and the rest weak. The optical density of bands at 20.4, 13.5, and 16.0 microns is constant for all T_{tr}, while the T_{tr}-dependence of the optical density of bands at 3.5, 4.6, and 9 microns is of an extremal character.

It was found for the first time that the degree of transmission (background) depends on T_{tr}. There are two types of backgrounds: 1) general background and (2) [illegible] increasing in the direction of the short-wave region of the [illegible] of both backgrounds is of a regular character. The [illegible] of background is the Tyndall effect. General background [illegible] be due to scattering by large supramolecular formations, the [illegible] to the Rayleigh-Jeans mechanism. The previous temperature history, [illegible] the crystallization temperature, has a significant effect

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USSR

ABDULLAYEV, [illegible], et al., Izvestiya Akademii Nauk Azerbaydzhanskoy SSR, Seriya Fiziko-Tekhnicheskikh i Matematicheskikh Nauk, No 6, 1971, pp 100-113

on the selective [illegible] process and the structure of the resultant material. [illegible] is a structurized system, and the growth of [illegible] such a melt may occur by the addition of ordered [illegible].

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USSR

UDC 539.292:537.525+537.528

VOLCHENKOVA, R. A., Moscow

"The Relationship Between the Heat Content and Physico-Mechanical and Erosion Characteristics of Metals"

Kishinev, Elektronnaya Obrabotka Materialov, No 4(52), 1973, pp 58-62

Abstract: The relationship between the heat content and physico-mechanical and erosion characteristics of metals is analyzed by reference to diagrams showing the change of the heat content with temperature for metals from liquid Hg to W, the erosion dependence of electrode materials on the heat content at fusing temperature per unit volume at electric discharges in different media, and characteristics of electrode materials in vacuum. The erosion characteristics of metals and the electric strength of the between-electrode distance were found to be determined by the energy of the interatomic bond. The latter changes with changing heat content per unit metal volume. To establish the principles of the behavior of metals in different physical processes, the properties of metals and their failure must be determined per unit volume. Four figures, two tables, 29 bibliographic references.

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1/2 043 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--CORROSION RESISTANCE OF BINARY NICKEL ALLOYS IN ALKALI -U-

AUTHOR-(03)-KRIVOSHEYA, V.YE., STEPANOV, V.V., VOCHKANOV, A.P.

COUNTRY OF INFO--USSR

SOURCE--ZASHCH. METAL. 1970, 6(1), 29-30

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--NICKEL ALLOY, METAL CORROSION RESISTANCE, METAL DEOXIDA ION, WELDING, WELDING ELECTRODE, TUNGSTEN, TITANIUM, ALUMINUM, ZIRCONIUM, MANGANESE, SILICON

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1980/1179 STEP NO--UR/0365/70/006/001/0029/0030

CIRC ACCESSION NO--AP0049385

UNCLASSIFIED

2/2 043 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0049385

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CORROSION RESISTANCE OF WELD JOINTS CONSTITUTING BINARY NI ALLOYS WITH DEOXIDIZING ELEMENTS TI, AL, ZR, MN, AND SI WAS INVESTIGATED IN AQ. NAOH (65PERCENT) AT 180-200DEGREES OVER 900 HR BY THE WT. AND METALLOGRAPHIC METHODS. THE FOLLOWING ADDITIVES WERE USED: TI 0.23-1.9, AL 0.24-3.88, ZR 0.4-1.5, MN 1.34-8.15, AND SI 0.36-3.19PERCENT. WELDING WAS CARRIED OUT IN AN AR ATM. WITH A NONFUSIBLE W ELECTRODE BY USING D.C. WITH INCREASE OF THE ALLOY ELEMENTS CONTENT, ONLY A SLIGHT CORROSION INCREASE WAS NOTED. NO INTERCRYST. CORROSION WAS OBSD.

UNCLASSIFIED

USSR

UDC 621.73.04.043

VOLCHKEVICH, T. A. and MAKSIMOV, L. Yu.

"Stamping Hard-to-Form Materials Under High Hydrostatic Pressures"

Moscow, Kuznechno-shtampovochnoye proizvodstvo, No 4, Apr 72, pp 9-12

Abstract: Discussed here are problems related to designing process parameters and tooling for stamping materials under high hydrostatic pressures. The study involved low-plasticity metals including gray iron, silicon iron, magnesium, molybdenum, and AE4ts aluminum-beryllium alloy to show the significant increase of their technological plasticity during upsetting. The measurements include the punch movements, hydrostatic pressure in the container, and pressures in the hydraulic system. Cited are the stamping parameters for presses of 315 to 3150 tonf operating under constant hydrostatic pressures up to 20,000 kgf/cm^2. (5 illustrations, 2 tables, 2 bibliographic references)

1/1

USSR

UDC 662.612.3

VOLCHKOV, E. P. and NIKITIN, P. V.

"Pitting of a Graphite Surface Under Blasting by an Inert Gas"

Novosibirsk, Fizika goreniya i vzryva, No 3, 1973, pp 369-375

Abstract: A method is proposed for computing the results of an experimental investigation into the turbulent boundary layer on the pitted and porous surface of graphite under a constant blast of an inert gas. The purpose of such a blast is to protect the surface against the action of chemically aggressive gases. Such factors as the speed of surface destruction, the coefficients of heat exchange and friction, and concentration of the components in the gas mixture near the surface, all of practical importance in such problems, are determined. The authors begin their analysis by considering the turbulent boundary layer developed on the reacting surface under blasting by the inert gas, using the integral relationship for diffusion of the i-th chemical element for the effective binary mixture. This equation is obtained from an earlier paper (E. P. Volchkov, et al, TVT, 8, 1, 1970, p 116). Experiments involving a graphite surface heated by induction are described and their results discussed. It is found that the effectiveness of the

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USSR

VOLCHKOV, E. P., et al, Fizika goreniya i vzryva, No 3, 1973, pp 369-375

blast increases with decreasing molecular weight of the blasting gas and with increasing isothermic factor.

2/2

USSR

UDC 532.507

VOLCHKOV, E. P., KOZ'MENKO, V. K., LEVEDEV, V. P.

"Influence of Initial Dynamic Sector on Heat Exchange in a Turbulent Boundary Layer with Injection"

Zhurnal Prikladnoy Mekhaniki i Tekhnicheskoy Fiziki, No 6, 1971, pp 126-131.

ABSTRACT: The results are presented of a study of the influence of an initial dynamic sector on heat exchange during injection. The experimental data produced indicate that the starting sector may have a significant influence on heat exchange. The method suggested is based on utilization of the relative laws of heat exchange; the influence of the initial sector is considered using the Stanton number over the impermeable surface. The calculations agree satisfactorily with the experimental data of these and other author's.

1/1

Thorium and Uranium

UDC 546.791.6:546.171.5

USSR

VOLCHKOV, G. N., KRYLOV, YE. I., SHAROV, V. A., and KHAKHALOV, A. A., Ural Polytechnical Institute imeni S. M. Kirov, Sverdlovsk, Ministry of Higher and Secondary Specialized Education RSFSR

"Compounds of Uranyl Oxalate with Hydrazine"

Moscow, Zhurnal Neorganicheskoy Khimii, Vol 15, No 1, 1970, pp 41-42

Abstract: A study was made of products of the reaction of uranyl oxalate with hydrazine using x-ray phase, derivatographic, and chemical methods of analysis. The starting preparations included 92% N_2H_4 and $UO_2C_2O_4$. The synthesis was conducted in alcoholic medium (96% C_2H_5OH) to avoid displacing hydrazine from the internal coordination sphere of water, since uranium exhibits greater affinity for oxygen than for nitrogen. Synthesis of the following products is described: $UO_2C_2O_4 \cdot N_2H_4 \cdot 0.75\ H_2O$ and $UO_2C_2O_4 \cdot 2N_2H_4 \cdot H_2O$. Study of the thermal decomposition of these compounds in air followed the derivatograph of the Paulik-Paulik-Erdey system, along with chemical analysis of the solid decomposition products. Thermal decomposition is accompanied by endo- and exo-effects: endo-effects at 140 and 130° are caused by the release of water, exo-effects at 200, 270, and 210°C -- by dissociation of N_2H_4 or by its oxidation by air oxygen, and at 335 and 355°C -- by oxidation of the oxalate ion. The end product of thermal decomposition is U_3O_8.

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Acc. Nr. AP0034206 Abstracting Service: CHEMICAL ABST. 4-70 Ref. Code UR 0078

74247u Compounds of uranyl oxalate with hydrazine. Volchkov, G. N.; Krylov, E. I.; Sharov, V. A.; Khakhalov [illegible] (Ural. Politekh. Inst. im. Kirova, Sverdlovsk, USSR). *Zh. Neorg. Khim.* 1970, 15(1), 41–2 (Russ). $UO_2C_2O_4.N_2H_4.0.75$-H_2O (I) formed as bright yellow ppt. when a suspension of 2 g $UO_2C_2O_4$ in 200 ml EtOH was mixed at room temp. with 0.4 ml 92% N_2H_4. Yellow-brown cryst. $UO_2C_2O_4.2N_2H_4.H_2O$ (II) was prepd. analogously at 50–60° by using 16 ml 92% N_2H_4. I and II decompd. 1st by losing H_2O, then, at 200–70°, by losing N_2H_4, and, finally, at 335–55°, by oxidn. of $C_2O_4^{2-}$. U_3O_8 is the final product of oxidn. of I or II. HMJR

7

REEL/FRAME 19710859

UDC: 621.165-226-758.3

USSR

KIRILLOV, I. I., FADDEYEV, I. P., AMELYUSHKIN, V. N., KOTOV, Yu. V., VOLCHKOV, V. I., RADIK, S. V., Leningrad "Order of Lenin" Polytechnical Institute imeni M. I. Kalinin

"A Moisture Collector"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 10, Apr 72, Author's Certificate No 332244, Division F, filed 11 Jun 70, published 14 Mar 72, p 134

Translation: This Author's Certificate introduces: 1. A moisture collector designed chiefly for a wet vapor turbine. The device contains collector chambers with drain channels installed in the body of a diaphragm over the hub of the working wheel. As a distinguishing feature of the patent, the efficiency of moisture extraction is increased by making the chambers in the form of annular grooves one over the other. The upper groove is connected by slits to the flow part on the vapor injection side, and the hub is tapered with increasing diameter in the path of the vapor with an annular projection at maximum diameter to throw the

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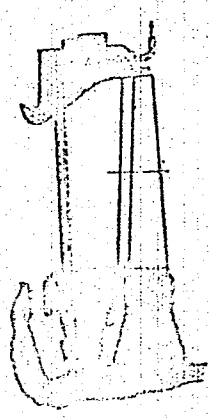
TRILLOV, I. I. et al., USSR Author's Certificate No 332244

moisture into the lower chamber. 2. A modification of this moisture collector distinguished by the fact that moisture-catching troughs are provided in the lower chamber.



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1/2 011 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--A SERIES OF CONTACTLESS SYNCHRONOUS POWER GENERATORS UP TO 100 KW FOR WIND DRIVEN ELECTRIC POWER UNITS -U-

AUTHOR-(04)-KRUSOV, I.O., KYZHKOV, V.S., ZILBERSHTEYN, L.A., VOLCHKOV, V.K.

COUNTRY OF INFO--USSR

SOURCE--ELEKTROTEKHNIKA (ELECTRICAL ENGINEERING), 1970, NO 1, PP 33-38

DATE PUBLISHED-------70

SUBJECT AREAS--ENERGY CONVERSION (NON-PROPULSIVE)

TOPIC TAGS--SYNCHRONOUS GENERATOR, WIND POWERED MOTOR, MAGNETIC CIRCUIT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3004/0252 STEP NO--UR/0292/70/000/001/0056/0058

CIRC ACCESSION NO--AP0130968

UNCLASSIFIED

2/2 011 UNCLASSIFIED PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0130968

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SPECIFIC OPERATING CONDITIONS OF GENERATORS IN WIND DRIVEN POWER PLANTS ARE ANALYZED. THE REQUIREMENT FOR DESIGNING A SPECIALIZED SERIES OF CONTACTLESS SYNCHRONOUS GENERATORS OPERATING AT THE INDUSTRIAL FREQUENCY IS PROVED. THE FOLLOWING SERIES OF NOMINAL POWERS IS ADOPTED: 1, 2, 4, 8, 16, 30 KW (ROTATIONAL SPEED 1500 RPM), 60, AND 200 KW (SPEED 1000 RPM). THE TYPE OF MACHINE WITH CLAW SHAPED ROTOR AND EXTERNAL MAGNETIC CIRCUIT IS SELECTED AS BEING OPTIMAL WITH REGARD TO A COMPLEX OF TECHNICAL AND ECONOMIC CRITERIA. THE CONFIGURATION IS ENCLOSED WITH NATURAL EXTERNAL COOLING. THE BASIC TECHNICAL SPECIFICATIONS OF THE GENERATOR SERIES IS PRESENTED (FROM THE RESULTS OF PROTOTYPE TESTS). A DESCRIPTION OF THE MACHINE CONSTRUCTION IS GIVEN. THE GENERATORS OF THIS SERIES ARE AT THE LEVEL OF THE MACHINES OF THE VERY BEST CONTEMPORARY SERIES WITH REGARD TO ENERGY, WEIGHT, AND SIZE CRITERIA AND HAVE VERY HIGH RELIABILITY.

UNCLASSIFIED

USSR

UDC: 532.522.2

VOLCHKOV, V. V., IVANOV, A. V., KISLYAKOV, N. I., REBROV, A. K., SUKHNEV, V. A., and SHARAFUTDINOV, R. G.

"Low-Density Jets from a Sonic Nozzle at Large Pressure Drops"

Moscow, Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki, No 2, 1973, pp 64-73

Abstract: Experiments are described for the observation of low-density gas dynamic jets using electron-beam analysis and the Pitot tube. A full description of the apparatus and the experimental method is given in earlier papers on which the present article is based (A. K. Rebrov, et al, Vliyaniye razrezhennosti na strukturu svobodnoy strui azota -- Effect of Rarefaction on the Structure of a Free Nitrogen Jet -- PMTF, No 1, 1971, and others). These experiments used sonic nozzles consisting of openings in a thin wall with a ratio of wall thickness to opening diameter of less than 0.05. With a Reynolds number greater than 200 at the nozzle opening, the effect of the boundary layer in the nozzle can be neglected and the flow factor of the nozzle can be taken equal to unity. Nitrogen, air, and carbon dioxide at a drag temperature of 300° K were used as the operating gases. The purpose of the experiments was to study the structure of longitudinal and transverse gas

USSR

UDC: 532.522.2

VOLCHKOV, V. V., et al, Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki, No 2, 1973, pp 64-73

dynamic parameter distributions in the initial part of the jet, and set up a detailed picture of the jet flow for Reynolds numbers reduced to values corresponding to the dispersion modes for which the local mean free path of the molecules is commensurate with the flow dimensions.

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Metrology, Mapping, Surveying, Graphics

USSR

UDC 533.6

VOLCHKOV, V. V. and KALUGIN, V. M. (Moscow)

"Measurement of the Speed of Rarefied Gas Streams on the Basis of the Carrying Away of an Ion Tracer Formed by an Electron Beam"

Moscow, Zhurnal Prikladnoy Mekhaniki i Tekhnicheskoy Fiziki, No 1, 1973, pp 88-94

Abstract: Consideration is given to the physical aspects of the formation of an ion tracer in a low-density gas stream, and results of experimental research are presented on the application of a method for measurement of the speed both within the flow core, and in nonisentropic regions of flow. An investigation is made of the features of a method of speed measurement with the use of a known base of two double probes, for recording the time of transit by the tracer. Comparison of the measurement results with data obtained by means of the imposition of full pressure shows that measurement of the speed by the indicated method can be conducted not only within the core of a supersonic stream, but, under certain conditions, also in nonisentropic regions of flow. 6 figures. 6 references.

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USSR

UDC 669.189:621.746.75

VOLCHOK, I. P., SHUL'TE, YU. A., and PINCHUK, YE. I., Zaporozh'ye

"Nonmetallic Inclusions and Failure of Tool Steel"

Moscow, Izvestiya Akademii Nauk SSR, Metally, No 1, Jan-Feb 1970, pp 109-112

Abstract: A description is given of a special attachment for a metallographic microscope designed for the study of the behavior of non-metallic inclusions during stretching of a specimen-microsection. The results of investigations of steel with different types of non-metallic inclusions showed that the form of the inclusions has a significant effect on the origin and propagation of microcracks. Eutectic sulfides of the second type contributed most to the formation and propagation of microcracks, while globular inclusions of the first type contributed the least. A correlation dependence was established between the extent of non-metallic inclusions in steel and the magnitude of effective surface energy.

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USSR

UDC 621.391:519.27

VOLCHOK, YU. G., SHCHELKUNOV, K. N.

"Optimal Reception of Incoherent Signals in Quantum Communications Channels"

Materialy nauchno-tekhn. konferentsii. Leningr. elektrotekhn. in-t svyazi. Vyp. 2 (Materials of the Scientific and Technical Conference. Leningrad Electrotechnical Communications Institute. Vyp. 2), Leningrad, 1970, pp 77-81 (from RZh-Radiotekhnika, No 8, Aug 70, Abstract No 8A35)

Translation: This article contains an investigation of the procedure for synthesizing optimal receivers in quantum communications channels. The possibilities of optimizing reception are investigated for the cases of commuting and noncommuting operators of signal and noise field density. This corresponds to the cases of incoherent and partially coherent radiation.

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USSR

UDC 538.4

VOL'DEK, A. I.

Leningrad, Induktsionnyye Magnitogidrodinamicheskiye Mashiny S Zhidkometallicheskim Rabochim Telom (Induction Magneto-hydrodynamic Machines with Liquid-Metal Working Material), Energiya Publishing House, 1970, pp 270-271

Translation:

USSR

VOL'DEK, A. I., Induktsionnyye Magnitogidrodinamicheskiye Mashiny S Zhidkometallicheskim Rabochim Telom, Energiya Publishing House, 1970, pp 270-271

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USSR

VOL'DEK, A. I., Induktsionnyye Magnitogidrodinamicheskiye Mashiny S Zhidkometallicheskim Rabochim Telom, Energiya Publishing House, 1970, pp 270 - 271

USSR

VOL'DEK, A. I., Induktsionnyye Magnitogidrodinamicheskiye Mashiny S Zhidkometallicheskim Rabochim Telom, Energiya Publishing House, 1970, pp 270-271

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USSR

VOL'DEK, A. I., Indukstionnyye Magnitogidrodinamicheskiye Mashiny S Zhidkometallicheskim Rabochim Telom, Energiya Publishing House, 1970, pp 270-271

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USSR

VOL'DEK, A. I., Induktsionnyye Magnitogidrodinamicheskiye Mashiny S Zhidkometallicheskim Rabochim Telom, Energiya Publishing House, 1970, pp 270-271

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USSR

VOL'DEK, A. I., Induktsionnyye Magnitogidrodinamicheskiye Mashiny S Zhidkometallicheskim Rabochim Telom, Energiya Publishing House, 1970, pp 270-271

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USSR

VOL'DEK, A. I., Induktsionnyye Magnitogidrodinamicheskiye Mashiny S Zhidkometallicheskim Rabochim Telom, Energiya Publishing House, 1970, pp 270-271

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USSR

VOL'DEK, A. I., Induktsionnyye Magnitogidrodinamicheskiye Mashiny S Zhidkometallicheskin Rabochim Telom, Energiya Publishing House, 1970, pp 270-271

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USSR

VOL'DEK, A. I., Induktsionnyye Magnitogidrodinamicheskiye Mashiny S Zhidkometallicheskim Rabochim Telom, Energiya Publishing House, 1970, pp 270-271

10/10

USSR

UDC 621.355.8.035.4

VOLDIN, R. V., SUSHENTSOVA, S. N., and MILYUTIN, N. N.

"Wettability of the Housing and Flow of Electrolyte in Hermatically Sealed Nickel-Cadmium Batteries"

Sb. rabot no khim. istochnikam toka Vses n.-n akkumulyator. in-t (Collection of Works on the Chemical Source of Current. All-Union Scientific Study Institute for Storage Batteries) Vyp 7, 1972, pp 161-163 (from Referativnyy Zhurnal — Khimiya, No 8(II), 1973, Abstract No 8L235 by V. S. Levinson)

Translation: Results are given for study of the wettability of steel 08KP, used to make the housings of alkali batteries, by a solution of alkali at different surface potentials of the metal. The greatest wettability, determined from the increased tendency of the electrolyte to flow over the battery housing, was observed for electrical junctions of the body with the negative terminal of the electrode and the least for the isolation of the case from the working electrode.

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VOLEGOV, A. I.

JPRS 55569
29 Mar 72

UDC: 616-006-097.3-021.6

LOCAL INTENSIFICATION OF CELLULAR IMMUNOLOGICAL REACTION AND RESISTANCE TO TUMORS

[Article by A.I. Volegov, Moscow Scientific Research Institute of Oncology imeni P.A. Gertsen; Moscow, Vestnik Akademii Meditsinskikh Nauk SSSR, Russian, No 2, 1972, pp 91-93]

Much attention is attributed to cellular immunological reactivity in the mechanisms of antineoplastic resistance (Cruz; G.Ya. Svet-Moldavskiy and V.P. Gamburg; Delorme and Alexander; Malmgren; Teichman and Witts, and others).

Our purpose was to determine how artificial intensification of local cellular immunological reactivity affects resistance to a carcinogenic factor used in the same area. We used a killed BCG [bacille Calmette Guerin] culture as the agent to intensify the cellular reaction.

The first series of experiments was conducted on 10 female Wistar rats 8 months of age. We gave subcutaneous injections of 1 mg methylcholanthrene in 0.3 ml 5% water-oil emulsion in the region of the right scapula to nine control animals; ten experimental rats received the carcinogen by the same method and in the same dosage, but to the emulsion we added killed mycobacteria tuberculosis on the basis of 10 mg/ml.

It was found that in an observation period of 4.5 months tumors developed in six out of the nine controls and did not develop in any of the experimental animals. They did not develop in the latter group even upon further followup for up to seven months. Thus, when the carcinogen was administered in a mixture with BCG, at the periods indicated, this prevented development of tumors.

In the second series of investigations our objective was to answer the following questions: 1) will tumors develop when very large doses of carcinogen are used with BCG? 2)are there changes in immunological reactivity of animals who received carcinogen with BCG, as compared to animals who received only BCG?

Acc. Nr: AP0051934 Ref. Code: UR 0219

PRIMARY SOURCE: Byulleten' Eksperimental'noy Biologii i Meditsiny, 1970, Vol 69, Nr 2, pp 79-81

EFFECT OF CHANGES IN THE REACTIVITY OF THE ORGANISM INDUCED BY THE FULL STIMULANT OF FREYND ON AHE APPEARANCE OF INDUCED TUMOURS IN THE RAT

A. I. Volegov

P. A. Herzen Scientific Research Institute of Oncology, Moscow

Investigation was made of the effect of the full stimulant of Freund on resistance to appearance of methylcholanthrene-induced tumours in the rat. It was found that when administered into the paw cushions of the intanct and vaccinated animals 10 days after administration of cancerogen and especially 10 days before its administration, this stimulant increases frequency of appearance of tumours. This effect seems to be due to the development of autoimmunic processes.

2 pc

USSR

UDC 621.373:530.145.6

VOLEK, T. B., KAYTMAZOV, S. D., MEDVEDEV, A. A., POGORELSKIY, I. V.

"Obtaining Single Picosecond Pulses in a Laser with a Thin Translucent Laser"

Kratk. soobshcheniya po fiz. (Brief Reports on Physics), 1970, No 4, pp 15-19 (from RZh-Radiotekhnika, No 8, Aug 70, Abstract No 8 D185)

Translation: This article contains descriptions of experiments in generating single picosecond pulses by a neodymium glass laser. It is demonstrated that in obtaining such pulses, wedge-shape mirrors, a container located at the Brewster angle, the pumping level close to threshold and corresponding choice of type and concentration of phototropic dye are necessary. Pulses 1 picosecond long are obtained both with thick and thin containers. Replacement of a thick container by a thin one increases the probability of obtaining pulses from 30 to 45%. Use of a reflecting container increases the stability of operation of the laser.

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1/2 009 UNCLASSIFIED PROCESSING DATE--09OCT70
TITLE--DEALKYLATION OF P TERT ALKYLPHENOLS IN THE PRESENCE OF SULFURIC ACID -U-
AUTHOR-(03)-VOLEPSHTEIN, A.B., YULIN, M.K., DOBRUSHKINA, I.N.

COUNTRY OF INFO--USSR

SOURCE--NEFTEKHIMIYA 1970, 10(1), 76-82

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--DEALKYLATION, ALKYLPHENOL, SULFURIC ACID, ISOBUTENE, PROPANE, STYRENE, BENZENE DERIVATIVE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1992/1884 STEP NO--UR/0204/70/010/001/0076/0082

CIRC ACCESSION NO--AP0112864
UNCLASSIFIED

2/2 009 UNCLASSIFIED PROCESSING DATE--090CT70

CIRC ACCESSION NO--AP0112864

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TITLE PHENOLS WERE HEATED WITH 0.5 WT. PERCENT CONCD. H SUB2 SO SUB4 60 MIN AT 100-204DEGREES. 4,TERT,BUTYLPHENOL (I) AT 130-60DEGREES FORMS PHENOL AND 2,4,DI,TERT,BUTYLPHENOL, AND, AT 180-204DEGREES, ISOBUTYLENE AND PHENOL. P,TERT,OCTYLPHENOL (II) AT 190DEGREES FORMS 39.4 WT. PERCENT DIISOBUTYLENE, 33.0 PHENOL, 5.2 I, AND 19.4 II. AN EQUIMOLAR MIXT. OF PHENOL AND II AT 190DEGREES GAVE 29, 15.7, 26.8, AND 23.0PERCENT, RESP. 2,PHENYL,2, (4,HYDROXYPHENYL)PROPANE (III) AT 204DEGREES GAVE 2.9 ALPHA,METHYLSTYRENE, 27.9 PHENOL, 32.1 1,1,3,TRIMETHYL,3,PHENYLINDAN, AND 37.1PERCENT III. 2,2,BIS(4,HYDROXYPHENYL)PROPANE (IV) AT 204DEGREES GAVE 53.5PERCENT PHENOL; THE REST WAS UNIDENTIFIED. THE RELATIVE DEGREES OF DEALKYLATION AT 190DEGREES ARE: I, 3.7; II, 80.6; III, 42.9; IV, 72.0. FACILITY: INST. GORYUCH. ISKOP., MOSCOW, USSR.

UNCLASSIFIED

Water Treatment

USSR

UDC: 541.183.1.004.67:681.3

MARKOVA, T. S., KOZHEVNIKOV, A. V., VOL'F, I. V., KONOREV, V. A., Leningrad Technological Institute of the Paper and Pulp Industry

"Investigation of the Effect of Various Factors on the Coefficient of Utilization of the Reductive Capacity of Electron Ion exchange Resins in the Process of Absorption of Oxygen Dissolved in Water"

Leningrad, Zhurnal Prikladnoy Khimii, Vol. 45, No 5, May 72, pp 1046-1049

Abstract: Studies were done on optimizing the process of deoxygenating water by electron ion-exchange resins. Experimental data were analyzed to determine the relationship between the coefficient of utilization of the reductive capacity of KU-11 cation-exchange resin and a combination of six independent factors: X_1 -- grain size, X_2 -- temperature, X_3 -- oxygen concentration in the water, X_4 -- concentration of copper in the ion-exchange resin, X_5 -- rate of filtration and X_6 -- height of the filtering layer. The analysis showed that grain size could be disregarded. Calculations on the "Minsk-22" computer gave a linear regression equation after elimination of X_1. The relative influence of different factors on the dependent variable Y_0 was accounted for by introducing coefficients of elasticity, where a_i is the regression coefficient of the i-th factor, $\bar{X}_i$ is the average value of the i-th factor, and $\bar{Y}$ is the average value of the dependent variable.

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USSR UDC 678.675:542.949

STARKOVA, A. N., SHAPIRO, Ye. I., KIRILENKO, Yu. K., MEOS, A. I., VOL'F, L. A., VISHNYAKOVA, T. P., and ZUMMEROV, S. R., Leningrad Institute of the Textile and Light Industries imeni S. M. Kirov, and Moscow Institute of the Petrochemical and Gas Industries imeni I. M. Gubkin

"Modification of Capron Fiber With Ferrocenaldehyde"

Leningrad, Zhurnal Prikladnoy Khimii, Vol XLV, No 2, Feb 1972, pp 447-449

Abstract: One of the basic weaknesses of polyamide fibers is low heat-resistance. Chemical methods for remedying this weakness (based mostly on processing with bifunctional compounds and formaldehyde to form intermolecular cross-links in the polymer), but almost nothing has been published on the use of other monoaldehydes which might act as modifying agents to strengthen the resistance of polyamides to thermo-oxidative destruction. The authors studied ferrocenaldehyde (FCA) as a modifier, in the case of the fiber Capron. Phosphoric acid was used to increase reactivity of the aldehyde groups; this acid reacts only slightly with Capron, and not at all with ferrocenaldehyde. Ethanol was the solvent used. It was found that treatment of Capron with FCA substantially increases the heat-resistance of this fiber. This is explained

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USSR

STARKOVA, A. N., et al., Zhurnal Prikladnoy Khimii, Vol XLV, No 2, Feb 1972, pp 447-449

on the basis of decreased concentration of free terminal amino groups during their blocking by an aromatic compound of FCA type, as is suggested by other published data. Graphic data are given on the strength, elongation and thermal properties of Capron, as these are affected by concentrations of FCA and H_3PO_4, and by heating.

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USSR UDC 677.4:54-171:539.16.04

STARKOVA, A. N., KIRILENKO, YU. K., SHAPIRO, YE. I., YEOS, A. I., VOL'F, L. A., VISHNYAKOVA, T. P., VLASOVA, I. D., PANCHENKOV, G. M., and KAUCHANSKIY, D. A.

"Radiation Resistant Polyamide Fiber"

Leningrad, Radiokhimiya, Vol 13, No 5, 1971, pp 785-786

Abstract: An attempt was made to increase the resistance of polyamide fiber towards β-radiation by treating it with ferrocene containing compounds. Caprone cord fiber was treated with ferrocenealdehyde (FCA) under following conditions: FCA - 3%; catalyst - 6.5% H_3PO_4; temperature - 75°C; duration - 2 hrs; solvent - ethanol. The fiber obtained was more resistant to thermo-oxidative destruction than the starting material: after heating for 2 hrs at 200°, the modified fiber retained 60-70% of the initial strength, while the starting material dropped down to 25%. The modified fiber was found to posses high adhesiveness towards the resin; it can be used in production of hoses, conveyor belts, driving belts, etc, performing under radiation.

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USSR

UDC 677.494.72

SLATINA, S. D., KIRILENKO, Yu. K., VOL'F, L. A., MEOS, A. I., KLIMENKO, I. B., GRACHEV, V. I., VISHNYAKOVA, T. P., and VLASOVA, I. D., Leningrad Institute of the Textile and Light Industries imeni S. M. Kirov, and Moscow Institute of the Petrochemical and Gas Industries imeni I. M. Gubkin

"Polyvinyl Fabrics Modified With Ferrocene-Containing Compounds"

Leningrad, Zhurnal Prikladnoy Khimii, Vol XLV, No 2, Feb 1972, pp 446-447

Abstract: Heteroorganic compounds are already widely used as modifiers of chemical fibers, and specific methods are known for imparting desired properties to fibers by the use of silicon- and boron-containing compounds. However, the use of ferrocene-containing compounds in this way has not been described, although these compounds impart a number of valuable properties to polymers, notably resistance to heat and radiation. Ferrocene-containing compounds are of further interest in having possible biological effects, including an effect on blood-formation. Polyvinyl alcohol (PVA) fiber was treated with 1,1-diacetylferrocene-formaldehyde (DAFF) resin, obtained by condensation polymerization with formaldehyde in the presence of Na_2CO_3 in ethanol. The freshly formed fiber was submerged for 1-5 minutes in 5-20% solutions of the resin, then heated at 140-180° for 10-20 minutes.
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The fiber became resistant to the effect of hot water. Apparently, in the fiber-resin reaction there was condensation of the PVA hydroxyl groups with the resin methyl groups, so that simple ester bonds were formed between the two polymers; this was confirmed by comparison of the number of hydroxyl groups in the initial fiber, the resin-processed fiber, and the heated resin, and also by infrared data. Graphic data accompany the paper.